Serial No. 09/514,250 Docket No. YHK-0039

IN THE CLAIMS:

Please cancel claims 1-18, 26-40 and 44-60 without prejudice or disclaimer, amend claim 20 and add new claims 61-82.

1-18. (Cancelled)

19. (Previously Amended) A projection lens system, comprising:

a first lens having a positive refractive power at the center thereof and a negative refractive power at the peripheral thereof;

a second lens having a relatively large positive refractive power;

a third lens having a positive refractive power;

a fourth lens having a negative refractive power; and

a diffractive optical element formed on at least one surface of said lenses.

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20. (Currently Amended) The projection lens system according to claim 19, wherein said first, third and fourth lenses are each designed to have an aspheric surface.

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21. (Previously Amended) The projection lens system according to claim 19, wherein one surface of said first lens is designed to have an aspheric surface and the other surface of said first lens is designed into a surface of the diffractive optical element.

22. (Previously Amended) The projection lens system according to claim 19, wherein one surface of said third lens is designed to have an aspheric surface and the other surface of said first lens is designed into a surface of the diffractive optical element.

23. (Previously Amended) The projection lens system according to claim 19, wherein a plurality of recesses with a shape of concentric circles are provided at the diffractive optical element in such a manner to have a rotational symmetry.

24. (Previously Amended) The projection lens system according to claim 23, wherein pitches of said recesses are decreased in such a manner that a phase amount is reduced as it goes from the center of the diffractive optical element into the peripheral thereof.

25. (Previously Amended) The projection lens system according to claim 19, wherein at least one of said lenses is made from a plastic.

26-40. (Cancelled)

41-43. (Previously Cancelled)

44-60. (Cancelled)

61. (New) The projection lens system according to claim 19, wherein the shape of the first lens and the shapes of the third and fourth lenses are defined by the following equation:

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$$X(r) = (cr^2/(1+(1-(1+K)c^2 r^2))^{½}) + Ar^4 + Br^6 + Cr^8 + Dr^{10} + Er^{12},$$

wherein X(r) is a sag value with reference to an aspheric surface at a height r from an optical axis, c defines a curvature of a lens surface at the height r from an optical axis, K is a conic constant, and A to E define aspheric coefficients.

62. (New) The projection lens system according to claim 19, wherein the fourth lens and the diffractive optical element have chromatic dispersion characteristics opposite to one another.

63. (New) The projection lens system according to claim 19, wherein the third lens forces the chromatic aberrations to decrease thus enhancing the chromatic aberration correction characteristic of the projection lens system.

64. (New) The projection lens system according to claim 19, wherein the fourth lens enables a focal length of a blue light beam to be shorter than that of a red light beam and the diffractive optical element forces a focusing distance of the red light beam to be shorter than that of the blue light beam, thus correcting chromatic aberrations.

65. (New) The projection lens system according to claim 19, wherein the combination of lenses in the projection lens system does not require additional lenses having a negative refractive power to enlarge the dispersion of a beam.

66. (New) The projection lens system according to claim 19, wherein the second lens provides the majority of the positive refractive power and the diffractive optical

element corrects aberrations caused by the second lens, thus allowing providing a thin projection system.

67. (New) A projection lens system, comprising:

a first lens having a positive refractive power at the center thereof and a negative refractive power at the peripheral thereof;

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a second lens having a relatively large positive refractive power;

a third lens having a positive refractive power;

a fourth lens having a negative refractive power; and

a diffractive optical element formed on at least one surface of said lenses, wherein the shape of the first lens and the shapes of the third and fourth lenses are defined by the following equation:

$$X(r) = (cr^2/(1+(1-(1+K)c^2 r^2))^{1/2}) + Ar^4 + Br^6 + Cr^8 + Dr^{10} + Er^{12},$$

wherein X(r) is a sag value with reference to an aspheric surface at a height r from an optical axis, c defines a curvature of a lens surface at the height r from an optical axis, K is a conic constant, and A to E define aspheric coefficients.

68. (New) The projection lens system according to claim 67, wherein the fourth lens and the diffractive optical element have chromatic dispersion characteristics opposite to one another.

69. (New) The projection lens system according to claim 67, wherein the third lens forces the chromatic aberrations to decrease thus enhancing the chromatic aberration correction characteristic of the projection lens system.

70. (New) The projection lens system according to claim 67, wherein the fourth lens enables a focal length of a blue light beam to be shorter than that of a red light beam and the diffractive optical element forces a focusing distance of the red light beam to be shorter than that of the blue light beam, thus correcting chromatic aberrations.

71. (New) The projection lens system according to claim 67, wherein the combination of lenses in the projection lens system does not require additional lenses having a negative refractive power to enlarge the dispersion of a beam.

72. (New) The projection lens system according to claim 67, wherein the second lens provides the majority of the positive refractive power and the diffractive optical

element corrects aberrations caused by the second lens, thus allowing providing a thin projection system.

73. (New) The projection lens system according to claim 67, wherein said first, third and fourth lenses are each designed to have an aspheric surface, wherein the shape of each of the first, third and fourth lenses is designed to work in conjunction with the others of the first, third and fourth lenses to correct aberrations.

74. (New) A projection lens system, comprising:

a first lens having a positive refractive power at the center thereof and a negative refractive power at the peripheral thereof;

a second lens having a relatively large positive refractive power;

a third lens having a positive refractive power;

a fourth lens having a negative refractive power; and

a diffractive optical element formed on at least one surface of said lenses, wherein the fourth lens and the diffractive optical element have chromatic dispersion characteristics opposite to one another.

75. (New) The projection lens system of claim 74, wherein the third lens forces the chromatic aberrations to decrease thus enhancing the chromatic aberration correction characteristic of the projection lens system.

76. (New) The projection lens system of claim 74, wherein the diffractive optical element is formed on at least one surface of said lenses, and wherein the fourth lens enables a focal length of a blue light beam to be shorter than that of a red light beam and the diffractive optical element forces a focusing distance of the red light beam to be shorter than that of the blue light beam, thus correcting chromatic aberrations.

77. (New) The projection lens system of claim 74, wherein the combination of the lenses correct chromatic aberrations and provide positive refractive power.

78. (New) The projection lens system of claim 74, wherein the shape of the first lens and the shapes of the third and fourth lenses are defined by the following equation:

$$X(r) = (cr^2/(1+(1-(1+K)c^2 r^2))^{1/2}) + Ar^4 + Br^6 + Cr^8 + Dr^{10} + Er^{12},$$

wherein X(r) is a sag value with reference to an aspheric surface at a height r from an optical axis, c defines a curvature of a lens surface at the height r from an optical axis, K is a conic constant, and A to E define aspheric coefficients.

79. (New) The projection lens system according to claim 74, wherein the combination of lenses in the projection lens system does not require additional lenses having a negative refractive power to enlarge the dispersion of a beam.

80. (New) The projection lens system according to claim 74, wherein the second lens provides the majority of the positive refractive power and the diffractive optical element corrects aberrations caused by the second lens, thus allowing providing a thin projection system.

81. (New) The projection lens system according to claim 74, wherein said first, third and fourth lenses are each designed to have an aspheric surface, wherein the shape of each of the first, third and fourth lenses is designed to work in conjunction with the others of the first, third and fourth lenses to correct aberrations.

82. (New) The projection lens system of claim 19, wherein the combination of the lenses correct chromatic aberrations and provide positive refractive power.